Space Weather Forecast

Issued on Thursday, 17 November 2022 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Decreasing chance of Moderate flares (Minor to Moderate radio blackouts) throughout. Very slight chance of Minor Radiation Storms and Strong flares (Strong radio blackouts) to start. Chance of G1 (Minor) geomagnetic storm periods Day 3 (19 Nov) onwards.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been at Low levels, with often frequent but low level Common-class flare activity, mostly originating from the largest and most complex spot group located toward the northwest limb.

There are currently six numbered regions on the visible disc. The northwest limb remains the most complex region with three sunspots about to reach the western horizon. A small and simple spot lies mid disk. Two regions in the southeast, a large single spot and a much smaller more complex spot, both have shown little development since emerging onto the visible disk. A new region is currently emerging around the northeast limb, full classification difficult due to position but looks to be small..

No significant Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been slow-ambient. Total magnetic field strength has been weak throughout, with the important north-south component fluctuating weakly. Geomagnetic activity was Quiet (Kp 0-1) throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain generally Low during the period. There is a diminishing chance of isolated M-class flares throughout and a slight chance of isolated X-flares through days 1 (17 Nov) and 2 (18 Nov), as the complex spot group located toward the northwest limb rotates away.

Solar Wind / Geomagnetic Activity: No significant Earth-directed CMEs are expected during the period, although some minor CME effects are possible from a weak glancing passage either later on day 1 (17 Nov) or during day 2 (18 Nov).

Solar winds are currently at slow-ambient levels and expected to remain so through Days 1 and 2. An enhancement is expected during on Day 3 (19 Nov) as the large negative polarity coronal hole in the southwest disk becomes geoeffective, with enhancement persisting into Day 4 (20 Nov). Geomagnetic activity is forecast to be predominantly Quiet to Unsettled through Day 1 and

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into 2, a very slight chance of isolated Active interval should any CME effects manifest. Later on Day 2 and into Days 3 and 4, Unsettled to Active levels expected with a chance of G1 (Minor) geomagnetic storming periods under high speed stream.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is most likely to persist at background levels. However, there is a slight chance of a solar radiation storm emanating from the two largest sunspot regions in the far northwest to start.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	30	10	10
Very Active	R3 to R5 X	No	10	5	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	5	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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